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MALARIA TREATMENT

ESSENTIALS OF TREATMENT FOR MALARIA

Malaria cases will be treated according to these essentials.

HIROSE, Yoshio
CO, Med Sec, MO Force

TABLE OF CONTENTS

- I. Object
- II. Special Treatments.
- III. Specific Treatments.
- IV. Precautions in Treatments.
- V. Deciding Method of Cure.

I. OBJECT

The treatment of malaria will conform to these essentials and those stated in Med Order No 63 issued 7 Jul 41, entitled "Object of Field Treatments".

II. SPECIAL TREATMENTS

A. Atabrine-Plasmochin Combination

1. Atabrine - 0.3 (three tablets). Take three times daily, after each meal. Continue for seven days.
2. Plasmochin - 0.03 (one and one half tablets). Take three times daily, after each meal. Continue for five days.

The above prescription may be tabulated as follows:

Prescription on Successive Days	"A" (TN ATABRINE) TREATMENT METHOD
1st Day	Atabrine 0.3 Three times daily, after each meal
2d Day	Same as above
3d Day	" " "
4th Day	" " "
5th Day	" " "
6th Day	" " "
7th Day	" " "
8th Day	" " "
9th Day	" " "
10th Day	" " "
11th Day	" " "
12th Day	" " "

When substituting anti-malarian for plasmochin, the dose will be equal to that of plasmochin.

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SECRET

The above atabrine-plasmochin combination treatment will be used, as a rule, as a special treatment.

When fever is not relieved by the use of this treatment, it will immediately be repeated or the quinine-plasmochin treatment described below will be administered. (Circumstances for the use of this treatment are noted below.)

Treatment of recurrent cases will also follow the above specifications.

B. Quinine-Plasmochin Treatment

1. Quinine sulphate 0.9 (four and one-half tablets. In case 0.3 tablets are used in the future, use three tablets); Plasmochin 0.03 (one and one half tablets). Take three times daily, after each meal. Continue for 3 weeks. This treatment will be used in the following cases.

- a. When atabrine is not available.
- b. When symptoms are thought to indicate a resistance to atabrine.

This treatment is forbidden for blackwater fever cases and patients allergic to quinine.

C. Supplementary Treatments

When symptoms indicate a need for further treatment even when the fever has abated through the use of atabrine-plasmochin combination treatment (or quinine-plasmochin treatment) as explained above, supplementary treatments will be continued.

Quinine sulphate 0.9; plasmochin 0.03. Take three times daily, after each meal. Treat for about 10 days continuously or repeat for about three weeks, a series of four days of medication, alternated with three days of non-medication. According to circumstances, it may be desirable to continue the supplementary treatment of hospitalized patients after discharge.

D. Injection of malaria medicines will be necessary in the case of the following symptoms.

1. Extreme fever, coma, deliriousness and other symptoms of malignant malaria requiring immediate relief measures.
2. Illness with sudden acute symptoms.
3. Repeated relapses in which a turn for the worse is feared.
4. Marked debility.
5. Abnormal increase of protozoa in the peripheral blood.
6. Oral medication is difficult because of vomiting, diarrhea, etc.

Intramuscular injections will be used generally. Use 0.3 gm atabrine three times daily (may be divided into one to three injections) and continue for two to three days. Since intravenous injection is liable to produce shock due to lowering of blood pressure it should not be used. When extremely acute symptoms make its use unavoidable, the following essentials should be followed.

1. Inject 0.2 gm atabrine into buttock, 0.1 gm intravenously.
2. Dissolve 0.2 gm atabrine in 500 cc of RINGER'S solution and mix 0.3 cc adrenalin or other heart stimulants suitable. Then inject the mixture slowly intravenously (drip injection if possible).
3. Dissolve 0.3 gm atabrine in 20 cc hypertonic sugar solution and inject very slowly intravenously.
4. Mix BAGNON solution in 20 cc hypertonic sugar solution and inject very slowly intravenously.
5. Dilute the BAGNON solution to about 120-200 cc using physiological salt solution. Add two to three drops of adrenalin and inject intravenously. (Strong BAGNON solution will contain 15% quinine hydrochloride. Weak BAGNON solution will contain 6.8% quinine hydrochloride. Dose will not exceed 0.5 gm of quinine per day, 2 cc if strong BAGNON solution, 7 cc if weak.)

In general, oral medication will be reverted to as soon as the crisis is past. In these cases, the atabrine oral treatment will be given up to the seventh day, including the number of days injections were given. The making of atabrine injection from atabrine tablets will be according to MC Force Medical Reference Material No 11. However, this will not be used for intravenous injections.

III. SPECIFIC TREATMENT

A. Preservation and improvement of nutrition, particularly the assurance of an adequate supply of vitamin B and C drugs, is desired. Close liaison will be maintained with supply warehouses, intendant offices and other related agencies. Constant effort will be made to supply eggs, millet, jelly, milk, other invalid foods, meats, and canned and fresh fruits.

The period of feeding rice gruel liquid and rice gruel will be shortened as much as possible. Caution will be taken against feeding a fever producing diet. In addition various measures will be taken such as the improvement of cooking, cleaning of the patients' mouth, and regularity of bowel movement.

B. Prepare a suitable treatment for anemia. Distribute such things as iron compounds, liver extract, raw milk (to which 100 grams of ground and filtered raw beef liver, soy sauce and water have been added). (Use the above as one dose. Give three times daily.) If necessary give blood transfusions. In this case it is advisable to add 0.1 gm of atabrine to the blood before transfusion.

C. To prevent acidosis give orally 6 to 10 gms bicarbonate of soda daily or drip inject 300 to 400 gms, of a 2% bicarbonate of soda solution into the intestines once to twice daily. (The latter method is effective in case of malignant malaria.) Watch the diet and prevent acidosis. When using bicarbonate of soda (2% JIUSONIN) intravenously, care must be taken because its secondary effects are strong and dangerous.

D. Heart strength should be maintained and strengthened. Much attention should be given to sensible methods of stimulating the heart. Heart stimulants should be given at an early stage. This applies especially to men suffering from either present or past symptoms of beri beri, communicable diseases, alcoholic poisoning, heart and kidney disorders, etc.

E. Immediate lumbar puncture for cerebral malaria cases will be strictly enforced since the cerebral and convulsive types frequently increase cerebral fluid pressure. The amount of fluid extraction will be limited to the amount necessary to return normal pressure. In cases where increase in pressure is not observed, fluid extraction is unnecessary. The spinal injection of atabrine will be avoided as its efficacy is doubtful and it may be dangerous.

F. An intravenous injection of 3 to 5 cc vita-camphor or injections of caffeine sodium benzoate, lobelin or cardiazol solutions will be given repeatedly in cases of acute heart weakness. Besides these, in cases of marked weakness of the heart, RINGER'S solution mixed with 0.3 cc adrenalin solution will be injected subcutaneously and a hypertonic sugar solution containing 0.4 to 0.6 cc of 1:1,000 strophanthin solution will be injected intravenously (very slowly).

In cases of KETSUREI types whose chief symptom is a paralysis of the peripheral blood vessels, heart stimulant and lotelin solution will be injected subcutaneously, intravenously or intracardiacly. Also drip inject intravenously a mixture of 500 cc RINGER's solution and 0.3 - 0.5 cc 1:1,000 adrenalin solution. Measures will be taken to keep limbs warm.

A blood transfusion of 200 to 300 g should be given cases having symptoms of very severe convulsions, delirium, beri beri, heart paralysis, angina pectoris, edema of the lungs. There are also times when intravenous injections of large doses of vitamin B drug are effective.

G. Treatment of the entire system, especially treatment for diarrhea and the protection of the liver, will be carried out as much as possible.

H. Improve surroundings. See that provisions are made for the cleanliness of personnel and clothing, for the maintenance of silence indoors, and for the regulation of ventilation and sleep.

I. Water is necessary for the relief of toxemia, replenishment of body fluids, urination, etc. For this reason water in large amounts will be supplied from an early stage. Coarse tea, (TN Inferior grade of green tea.) fruits, milk, and cider will be given by mouth. Physiological salt solution, RINGER's solution, and bicar-

SECRET

onate of soda will be drip injected into the intestines. (For drip injection into intestines: Height - 1 m, rate - 3.0 drops per minute.) Nutrient rectal injection and injections of hypertonic solutions are necessary.

J. Ice packs, ice pillows, wiping the entire body with a cold towel and ice water enema will be used in case of high fever.

K. Sedatives will be used for cerebral cases and close watch kept over cases showing signs of violence. Considering the general condition, 0.5 to 1.0 cc of morphine solution, pavinal solution or a small dose of strong narcocon - scopolamine solution and others may be injected. Coma type patients should be placed in prone position with head turned to the side.

IV. PRECAUTIONS IN TREATMENTS

A. Apply thorough and suitable treatment at an early stage and particularly to cases diagnosed to be malaria (also suspected cases), administer malaria drugs immediately.

B. Preserve strict rest and quiet during treatment, especially during acute stages.

C. During the period of convalescence, strive for the patient's complete recovery of strength and preservation of combat power.

D. Maintain strict quarantine of patients.

E. Prevent infection of attendants.

F. Guard against blackwater fever.

V. DECIDING METHOD OF CURE

Decision for malarial cure takes into account clinical cure with the eradication of general malarial symptoms, elimination of the causative organism from the blood stream, and recovery of strength and spirit. For this purpose seek the recovery of body strength by fixed periods of exercise in cases where clinical symptoms have disappeared and at the same time carry out simple physical examinations. Conduct urobilinogen reaction of the urine and serum reactions such as HENRY's reaction, COSTA's reaction or AKASHI's reaction and use them as reference.

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EXPERIMENTAL

Last month's issue contained an article on two experiments being done by Captain Carl G. Kadner, Sn C, CO of the 37th Malaria Survey Unit. This month we are able to report further on these experiments, the following being quoted from Capt. Kadner's February report.

"1. Experiments were conducted to test the effectiveness of DDT-soaked blocks in preventing mosquito breeding. This method was described in the January report. Blocks were placed near the inlet of algae covered pools left by the receding Butibum river. A slow current of water continuously passed through these pools. Ninety percent control was obtained by this method. Ordinary spraying with oil gave only sixty percent control.

"2. To determine the effectiveness of the plunger-type oil can (described in January report) for the application of DDT, an area of 80 acres was selected for control by this method. The area selected offered ideal sites for Anopheline and also artificial container breeding. Previously 110 gallons of oil were sprayed on this area per week. Control was never complete and considerable breeding was encountered all subsequent surveys. By use of the oil can and 5% DDT solution, 3.5 gallons were used in covering this area. The following week no breeding was encountered. The area was similarly controlled on the subsequent two weeks, expending two gallons and one and one half gallons respectively. No breeding has occurred in this entire area since the experiments were begun.

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SECRET

Air Spraying of DDT on Corregidor.

The following is a copy of a letter by Lt. Col. Richard R. Miller, M.C., Asst. Surgeon XI Corps.

"1. The undersigned was on Corregidor from February 16 to February 22, 1945. The debris and rubble and unsanitary condition left by the Japanese was conducive to poor fly control. The concentration of flies was at saturation, and an impossibility to protect wounds or food from contamination.

"2. The undersigned visited Corregidor on 28 February at 1000I. The effect of spraying on 27 February was amazing. Observers who were on the Island during the spraying said the effect of spraying was noticeable in 30 minutes to an hour. There was only a few flies noted during an hour stay on Topside during which time messes, latrines and waste disposal areas were inspected.

"3. This seems to be an ideal situation to see the effectiveness of DDT by Air, and its worth is immediately evident."

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Supplementary Note on DDT Airplane Spraying.

The following is quoted from a report made by Captain Philip J. Darlington, Sn C, of the 6th Malaria Survey Unit.

"1. The following note supplements my report of 4 March on airplane spraying with DDT in forward areas.

"2. On the morning 6 March a single C 47 sprayed 5% DDT oil solution over some positions of the 43rd Division in rugged country west of Bamban. The plane flew low, following contours well, and put out a broad white trail of spray which dispersed slowly. The weather was hot and dry, but there was a moderate breeze.

"3. I saw the spray plane only from a distance. However, it passed over the aid station of the 3rd Bn., 169th Inf., in the valley of the north fork of the Bamban River. Aid station personnel said the plane went directly overhead about 100 ft. high, leaving a strong trail of white 'smoke'. Soon after it passed, they smelled the spray, which they described as 'like Diesel oil and flit'. An hour and a half later they suddenly realized that flies, which had been very annoying, had almost disappeared. Three hours after the spraying, when I visited the aid station, I was told that flies were gradually increasing in numbers, but they were still very few. On the following morning (March 7) I revisited the aid station and found that flies had increased to a point where there were several around each man in the aid station tent.

"4. Pertinent comments on this mission are:

a. The spray plane covered only a very small part of the whole area held by the 43rd Division, and much of the ground actually sprayed was not occupied by troops, for positions and bivouac areas were small and scattered.

b. The effect of the spraying was disappointing. It was effective for a few hours, but within one day flies had reappeared in dangerous numbers.

"5. It is believed no further spraying should be attempted with a C 47 in this area. It is, however, strongly recommended that spot spraying of selected positions be tried, that the work be done by a properly equipped Cub plane, and that arrangements be made for the work to be observed by Malaria Survey personnel, to determine its effectiveness."

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SECRET

Latrine Treatment Studies

The following has been extracted from a report made by Lt. Colonel W. V. King, S C, who is now with the 19th Medical Service Detachment (General Laboratory).

Preliminary observations on fly emergence from DDT-treated latrines were continued during February. Use of one of the latrines was discontinued and the other two were closed during the month. A supply of paradichlorobenzene ("PDB") having recently been obtained, a new series of latrines was selected and observations and treatment were begun in the last week of February. Results of these tests will be reported at a later date.

The effect of DDT-oil solutions and Diesel oil alone on larvae collected from latrines is being compared by observations of the number of larvae surviving the treatment, their ability to pupate, and the resulting emergence rate of adults from various lots as compared with untreated check lots handled under the same conditions.

Laboratory Test No. 1

In this experiment fecal material containing many fly larvae (C. megacephals) was divided into three lots and placed in large tins. One lot was sprayed heavily with 5% DDT-oil solution, one lot with Diesel oil alone and the third lot received no treatment. The number of pupae recovered from the dry soil surrounding the tins is shown below:

<u>Lot No.</u>	<u>Treatment</u>	<u>Number Pupae Recovered</u>
1	DDT-oil	29
2	Oil only	40
3	Untreated	199

Although there was a marked reduction in number of pupae in the two treated lots it was evident that neither treatment was completely effective in killing the larvae. From observations on the action of the larvae, it appeared that the number surviving would have been larger had it not been necessary for them to crawl a considerable distance up the oiled sides of the tin in order to reach dry material for pupation. The type of container was changed in subsequent tests.

Laboratory Test No. 2

In this test, 60 counted larvae were placed in each of three dishes and the same treatments given as previously. Only a small proportion (25%) of the larvae pupated in the untreated lot and because of this the test was considered to be inconclusive. One adult was obtained from the DDT-oil treated dish, eight from the one treated with oil and nine from the control.

Laboratory Test No. 3

About a half cubic foot of heavily infested fecal material was divided into three portions and placed in small aluminum dishes having a diameter of about 5-1/2 inches and a depth of 2-3/4 inches. One fluid ounce of the oil was applied to each of the treated dishes and, as this completely covered the surface, the larvae were unable to escape for pupation without coming in contact with it. The pupae were counted and then retained for further count on the number of flies emerging. In the DDT test, more than half of the emerging adults were abnormal, either failing to emerge completely or dying before the wings were spread. These were considered to have been killed by the treatment.

<u>Lot No.</u>	<u>Treatment</u>	<u>Total Pupae</u>	<u>Total Flies Emerged</u>	
			<u>Normal</u>	<u>Abnormal</u>
1	DDT-oil	96	32 (33.3%)	43 (44.8%)
2	Oil alone	224	124 (55.3%)	1 (0.4%)
3	Untreated	284	210 (73.9%)	1 (0.3%)

SECRET

Cage Tests to Determine Effect of DDT Residual Sprays on Adults

Observations on the effect of DDT residual sprays against adult Chrysomya megacephala were begun in February. Cages treated with 200 mg. DDT per square foot of surface area are being used. The flies are introduced and the time required for complete knockdown (flies alive but unable to fly or walk) and complete mortality is noted:

Effect of DDT on Knockdown and Mortality

<u>No. Days After treating Cage</u>	<u>No. Flies Intro- duced</u>	<u>Time required for Complete Knockdown</u>	<u>Time required for Complete Mortality</u>
1	13	15 min.	1 hr. 30 min.
2	42	15 min.	1 hr. 30 min.
3	30	20 min.	2 hrs.
15	82	1 hr. 50 min.	3 hrs.
16	18	2 hrs.	4 hrs.
17	281	2 hrs. 10 min.	5 hrs.
18	619	3 hrs.	4 hrs. 50 min.

It is of interest to compare the knowdown time for C. megacephala in these tests with experiments conducted at Orlando, Fla., by the Bureau of Entomology against the housefly, Muaca domestica:

DDT-Treated Cages Tests

<u>Days After Treatment</u>	<u>5% DDT-fuel oil; one day old flies, Chry- somyia megacephala</u>	<u>5% DDT-kerosene; four days old flies; Musca domestica</u>
15	1 hr. 50 mins.	15 minutes
17	2 hrs. 10 mins.	(no data available)
18	3 hrs.	(no data available)
20	(no data available)	29 minutes

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Lt. Col. W. V. King was assisted in this work by 1st Lt. James P. Toffaleti, Sn C and 1st Lt. Harry Hoogstraal, Sn C. both of the Entomology Department.

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SCHISTOSOMIASIS

Captain D. Kirkham, M.C., has a further report on the Schistosomiasis situation on Leyte, his report is quoted for the information of all, "At least 280 cases have been diagnosed on Leyte to date, but no further deaths are recorded during the month. Publicity in the form of quips in the Daily Bulletin, articles in the daily papers, posters, roadside signs, and radio comments has been pushed. It is believed that very few exposures to this disease are occurring now. Two display trucks equipped with posters, charts, worms, eggs, snails, and other specimens are touring the base attracting considerable attention.

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UNIT CO'S

When submitting reports please specify the exact species of Anopheline larvae and/or mosquito under discussion when possible.

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Blood Smear Survey at the Rotation Camp

done by

207 Medical Composite Unit

1. The finding of 4 positive malaria smears and two doubtful ones among the 212 men surveyed at the Rotation Camp the last week of January 1945 led to an arrangement for a more extensive survey of these men being returned to the U.S.

2. With the cooperation of the 3rd Medical Laboratory which agreed to stain and read the smears and the 19th Medical General Laboratory which agreed to check all positive smears and every 10th negative smear, the survey was begun February 10th.

3. Shipments of men being sporadic and unpredictable it has been necessary to send our survey team to the Camp daily. Movement of the camp out to I Corps interrupted the survey for a few days but we have resumed work and are obtaining smears daily. Up to 1 March 1945 we had obtained 589 smears in addition to the 212 of the preliminary survey which was given in detail in the monthly report for January.

4. Summary of Survey through 28th February (not including the 212 reported last month):

Total number of smears taken and read	589
Total number of positive smears	0
Total number of doubtful smears	1

Of this number (589) our technicians stained and read 57 smears finding the single doubtful one which had two gametocyte-like structures in the thick smear but these appeared to be "moribund" gametocytes. The history of this man reports malarial attack 19 December 1944 but he was not hospitalized for it.

5. Analysis of the questionnaires regarding malaria:

Total questionnaires obtained and analyzed	589
Total number of men reporting malaria attacks	185
Percent of men reporting malaria attacks	31.42%

1 attack	137
2 attacks	20
3 "	7
4 "	2
5 "	2
6 "	6
7 "	0
8 "	1
9 "	2
Several	5
Number not given	3
	185

Total number of men hospitalized for malaria	127
Percent of men having malaria hospitalized	68.6%
Total of men with malaria having taken atabrine regularly	174
Percent of men with malaria having taken atabrine regularly	94%
Number of men with malaria not having taken atabrine regularly	5
Percent of men with malaria not having taken atabrine regularly	0.26%
Number of men not answering the question	6

Reasons given for not taking atabrine regularly:

1. "Didn't have any"
2. "Not available"
3. "Didn't need it"
4. " ? ? ?"
5. "Took quinine instead"

6. Answers to questions regarding diarrheas.

While we did not ask for information on diarrheas (the 19th Medical General Laboratory is conducting a stool survey) a sufficient number of men volunteered the information from which the following summary is derived:

SECRET

Number of men reporting diarrheas	130
Number of these men hospitalized for it	29
Number confined to quarters (3 attacks)	1

Attacks ranged from 1 to 18 per man, with 7 men reporting merely "Yes" or "Plenty"

Those venturing a guess as to the cause reported:

1. "? or undetermined"	88
2. "Bad food"	12
3. "Bad water"	7
4. "Mess kit laundry"	3
5. "Flies"	2
6. "Dysentery"	1
7. "Ptomaine"	1
8. "Nerves"	1

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Civilian Sanitation Project

Work being done by the 55th Malaria Control Unit, under the command of Captain Kerwin L. Mick, Sn. C., shows another example of the wide variety of work now being done by the control and survey units. The project is being done on the island of Mindoro, P.I.

"On 12 February the civilian Sanitation project being conducted by the 240th Engineers, supervised by the 24th Division Medical Inspector, was taken over by the 55th Malaria Control Unit. Latrines were being installed for each civilian family in the area. This was done in an effort to check the spread of such diseases as dysentery, jaundice, hoodworm, roundworm, and schistosomiasis. These diseases are prevalent in this area chiefly because of the native's almost universal practice of defecating indiscriminantly on the surface of the ground. By the end of the month a tot. of 164 latrines had been installed in the San Jose and San Agustin areas. Of these, 1 were installed by this unit. The latrines consist of covered gas drums (ends cut out) sunk in the ground. A small shed was placed over each latrine, constructed of salvaged lumber and corrugated sheet metal from wrecked buildings. The sheds are constructed in a work yard, by an "assembly-line method". Each family has been instructed in the use of the latrines and a large sign painted in the native language was mounted in a public location to instruct the population on the importance of sanitation. An oiling crew treated all of the latrines twice weekly, 785 gallons of oil being used since the project was taken over by this unit. Each family is requested to dig a garbage and latrine can pit, to be burned out and kept covered. After repeated warnings of failure to comply with the sanitary regulations, the family is reported to the Municipal Police Department, which has levied small fines on several occasions. A 5% solution of DDT in diesel oil has been prepared and will be used to treat these latrines within the next few days, for fly control. The chief difficulty at present is to get the people to keep the latrines covered. The small children are the worst offenders. However, persistent efforts will continue to be made to have the parents watch this and instruct the children. This sanitation project is important because of the close proximity of many military installations to civilian areas.

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The following is quoted from a report made by the 6th Malaria Survey Unit:
 "On 23 February, 1945, thick and thin blood smears were taken from 100 civilians living in the barrios of San Jose and Lourdes, which form parts of the town of Angeles. Of these 100 slides, only 2 were found positive for malaria (both falciparum, 1 with gametocytes). The two positives were from girls, 12 and 15 years old, who have been resident in the town but who have visited elsewhere."

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SECRET

Larval Mosquito Collections (Philippines)

6th Malaria Survey Unit

Place: Angeles, Pampanga Province, Luzon Island, P.I.

Date: 17 - 19 February 1945.

Collectors: Capt B. G. Markos, Capt P. J. Darlington, Sgt H. W. Pedersen,
Cpl C. D. Bird.

Sta No.	No. dips	Kind of place	Malaria vectors	Dengue vectors	Other mosquitoes
1	110	Seepage, grassy areas along edges of fast flowing streams, exposed to sunlight.	No	No	7 <u>Culex</u> sp. 1 <u>Uranotaenia</u> sp. 2 <u>A. pseudobarbirostris</u>
2	50	Grassy edges of a fast flowing river, exposed to direct sunlight, clear water.	1 <u>Anopheles</u> <u>Minimus</u>	No	1 <u>A. V. limosus</u>
3	45	Grassy edges of fast flowing river, clear water, exposed to direct sunlight	No	No	1 <u>A. annularis</u>
4	60	Grassy edges of flowing stream clear water, sunlight	3 <u>A. Minimus</u>	No	2 <u>Culex</u> sp. 6 <u>A. pseudobarbirostris</u>
5	35	Along grassy edges of flowing river, exposed to sunlight	6 <u>A. Minimus</u>	No	1 <u>A. filipinae</u> 1 <u>A. sp.</u>
6	60	Side pool, along river, sunlight, clear water, no vegetation.	1 <u>A. Minimus</u>	No	10 <u>Culex</u> sp. 1 <u>A. subpictus</u> <u>indefinitu</u>
7	35	Grassy edges of flowing river, shaded.	1 <u>A. Minimus</u>	No	1 <u>A. filipinae</u> 1 <u>A. barbirostris</u> 1 <u>A.H. pseudosinensis</u>
8	14	Grassy edges of fast flowing stream, sunlight	2 <u>A. Minimus</u>	No	2 <u>A. filipinae</u> 1 <u>A.H. pseudosinensis</u>
9	10	Grassy edges of flowing stream sunlight	3 <u>A. Minimus</u>	No	No
10	54	Carabao waterholes along banks of river, water hyacinth & grass, muddy water sunlight. Larvae among vegetation.	No	No	12 <u>Culex</u> sp. 5 <u>A.V. limosus</u>
11	3	Deep well (20 ft. depth) clear water, shaded.	No	No	20 <u>C. quinquefasciatus</u> 2 <u>C. pullus</u>
12	-	Clay flower pots in shade in gord, decaying veg. matter, such as leaves & twings, water brownish.	No	No	16 <u>C. quinquefasciatus</u>
13	-	Clay flower pots holding water, water polluted by decaying vegetable matter	No	31 <u>Aedes</u> larvae collected & reared in lab. yielding 19 adults which were: 5 <u>Aedes albopictus</u> and 14 <u>Aedes aegypti</u> adults	No
14	-		No		No
15	-		No		No
16	-		No		12 <u>Culex</u> sp.
17	-		No		No
18	-		No		10 <u>Culex</u> sp.
19	-	Drainage ditch next to house, shaded.			10 <u>Culex</u> sp. 12 <u>Culex quinquefasc</u>

SECRET

Malaria attack rate per 1000 per annum for the month of February 1945 for the weeks ending:

Oro Bay	SOS	6th & 8th Army	AF*	14th AA	USAFPE
9 Feb	63	149	-	51	15
16 "	66	0	-	0	0
23 "	44	0	-	51	22
2 March	52	0	-	0	276

* Not shown because of the few persons would not allow computation of a significant rate.

Lae	SOS	6th Army	AC	14th AA
2 Feb	21	0	0	0
9 "	0	0	0	0
16 "	34	1 case*	1 case*	0
23 "	22	0	0	0

* Unable to compute rate.

Hollandia	SOS	Gr. Forces	14th AA	Usaffe Repl Com.	Hq USASOS USAFPE	FEA
2 Feb	15.1	27.8	19.5	33.6	24.7	19.
9 "	15.1	13.9	39	22.4	13.7	39
16 "	17.7	13.9	34.2	22.4	41.1	34.
23 "	14.4	27.8	43.8	44.8	27.4	43.

Finschhafen	SOS	6th Army	8th Army	AF	14th AA
2 Feb	39	166.7	21.3	15.8	0.0
9 "	28.1	0.0	21.3	15.8	17.9
16 "	23.8	0.0	42.6	23.7	10.7
23 "	21.6	166.7	10.7	47.4	3.6

Blak	SOS	6th Army	8th Army	AF
2 Feb	51	185	16.7	36
9 "	12.8	-	10	26
16 "	26	-	-	24
23 "	40	-	33	9.8

Leyte	SOS			8th Army		
	Malaria	Dengue	FUC	Malaria	Dengue	FUC
2 Feb	34	67	93	41	168	177
9 "	41	35	78	39	83	223
16 "	34	32	69	-	-	-
23 "	28	20	66	-	-	-

8th Army rates for last two weeks not available.

The Monthly Progress Report for 31 January 1945 gives the following rates for malaria for the following months:

October, 37; November, 32; December, 32; January*, 61.

* Based on abbreviated radiographic statistical report.

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Captain Karl V. Krombein, Sn C, CO of the 32nd Malaria Survey Unit, reports, "During the month an important shipment of mosquitoes from New Guinea and the Philippines was sent to the Division of Insect Identification, U.S. Department of Agriculture, Washington, D.C. The shipment included approximately 800 adults and 100 slide mounts of larvae. This material is very valuable for research work in taxonomy of the mosquitoes, the published results of which enable us to identify mosquitoes are deposited in the Smithsonian Institution collections and representatives of mosquito vectors of disease are sent to the Army Medical Museum and the Army Medical School, Walter Reed General Hospital for display and educational purposes.

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SECRET

Location of units and what they are doing.

SURVEYS

CONTROLS (Con't)

- 1 Malaria Survey APO 706
- 2 Venereal Disease APO 75
- 3 Venereal Disease APO 75
- 4 Clark Field malaria survey APO 74
- 5 Schistosomiasis APO 72
- 6 Malaria survey APO 442
- 7 Malaria survey APO 920
- 1 Malaria survey APO 70
- 2 Insect control, flies & mosquitos APO 74
- 3 Mosquito survey & have furnished laboratory facilities for the civilian hospital in San Fabian APO 70
- 4 Malaria survey (en route APO 70) APO 565
- 5 Malaria survey APO 70
- 6 Health Department Manila APO 75
- 7 Venereal disease APO 75
- 8 Malaria survey APO 73
- 9 Malaria survey APO 159
- 0 Malaria survey, parasites & chigger investigations APO 70
- 1 Malaria survey & experiments with DDT APO 321
- 2 Schistosomiasis APO 72
- 3 Malaria survey APO 40
- 4 Schistosomiasis APO 72
- 7 Malaria survey & experimental work (see page 4) APO 713
- 8 Malaria survey APO 321
- 9 Health Department Manila APO 75
- 0 Malaria survey APO 705
- 1 Malaria survey APO 705
- 2
- 3
- 3
- 4 Malaria survey APO 926
- 5 Malaria survey APO 321
- 7 Malaria survey APO 565
- 8 Malaria survey APO 72
- 9 Malaria survey APO 719
- 0 Malaria survey APO 926
- 1 Plague Control School APO 72
- 3 Health Department Manila APO 75
- 0 Malaria survey APO 565

- 25 Mosquito control APO 70
- 26 Mosquito control APO 70
- 34 Primary duty - fly control APO 70
- 35 Mosquito control APO 70
- 37 Sanitation Internee camp Manila APO
- 38 Health Department Manila APO 75
- 52 Sanitation & mosquito control work APO 70
- 53 Health Department Manila APO 75
- 54 Mosquito control APO 926
- 55 Mosquito control APO 321
- 56 Mosquito control APO 920
- 58 Mosquito control APO 343
- 59 Mosquito control APO 70
- 60 Mosquito control APO 926
- 61 Mosquito control APO 74
- 62 Mosquito control APO 70
- 63 Mosquito control APO 713 - 1
- 64 Mosquito control APO 713
- 65 Mosquito control APO 72
- 66 Mosquito control APO 70
- 67 Have probably arrived at new location APO 705
- 68 This unit is enroute to Base K APO
- 69 Mosquito control APO 928
- 80 Mosquito control APO 72
- 81 Mosquito control APO 73
- 82 Mosquito & general sanitation APO 7
- 83 Mosquito control APO 322
- 84 Mosquito control APO 159 (may have moved)
- 85 Mosquito control APO 322
- 86 Mosquito control APO 159 (may have moved)
- 87 Mosquito control APO 719
- 88 Mosquito control APO 926
- 89 Mosquito control APO 926
- 90 Mosquito control APO 321 (may have moved)
- 91 Mosquito control APO 321 (may have moved)
- 92 Mosquito control APO 72
- 93 Plague Control School APO 70
- 94 Mosquito control APO 503
- 95 Mosquito control APO 72
- 96 Mosquito control APO 503
- 97 Civilian Sanitation Program APO 70
- 98 Mosquito control & general sanitation APO 70
- 99 Health Department Manila APO 75
- 100 Mosquito control APO 70
- 101 Mosquito control APO 920
- 102 Mosquito control APO 920
- 103 Mosquito control APO 705
- 104 Mosquito control APO 565
- 105 Mosquito control APO 565
- 106 Mosquito Control APO 565
- 110 Mosquito control APO 70
- 120 Mosquito control APO 565
- 121 Mosquito control APO 70

CONTROLS

- 1 Health Department Manila APO 75
- 2 Health Department Manila APO 75
- 3 Mosquito control APO 70
- 4 General sanitation troop units and adjacent civilian communities APO 70
- 5 Mosquito control APO 926
- 6 Mosquito control which includes maintaining of flush dams APO 321
- 7 Mosquito control APO 70
- 8 Mosquito control, also lending trucks to medical units APO 321
- 9 Health Department Manila APO 75
- 0 Health Department Manila APO 75
- 1 Mosquito control APO 72
- 2 Health Department Manila APO 75
- 3 Mosquito control APO 72
- 4 Mosquito control APO 710
- 5 Mosquito control APO 926

CLASSIFICATION CANCELLED
by authority of

THE SURGEON GENERAL

EC Date 9 Aug 52
E. C. Craft, Capt MSC
Security Officer

- 12 -
UNCLASSIFIED
SECRET

75% efficient
for malaria